REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-5, 7-9 and 11-14 are currently being prosecuted. The Examiner is respectfully requested to reconsider the rejections in view of the Amendments and Remarks as set forth hereinbelow.

CLAIM OBJECTIONS

Regarding the objections to claims 1 and 14, claims 1 and 14 have been amended as suggested by the Examiner. Accordingly, it is respectfully requested these objections be withdrawn.

REJECTION UNDER 35 USC § 103

Claims 1-4, 7-9 and 11-14 stand rejected under 35 USC § 103(a) as unpatentable over Yonekura in view of Jensen et al. This rejection is respectfully traversed.

Independent claim 1 is directed to a safety bus system including a plurality of first bus-capable modules, each being connected to at least one sensor and at least one actuator, and in which the sensor is configured to sense operational characteristics of a respective machine component in an operating machine and the actuator is configured to actuate said respective machine component. The safety bus system also includes at least one second bus-capable module connected to at least one safety function, at least one bus controller configured to control the respective machine components via the corresponding first bus-capable modules, and at least one bus line interconnecting the first and second bus-capable modules and the at least one bus

controller. Further, when the safety function is selected, the bus-controller variably controls the respective machine components based on the sensed operational characteristics and a type of the safety function such that a number of various flexible safety concepts are applied to the operating machine. Independent claim 14 includes similar features in a varying scope.

These features are supported at least by Fig. 1 and the corresponding description in the specification. For example, Fig. 1 illustrates a safety bus system including a plurality of first bus-capable modules (14), each being connected to at least one sensor (22) and at least one actuator (20), and in which the sensor (22) is configured to sense operational characteristics of a respective machine component in an operating machine (12) and the actuator (20) is configured to actuate the respective machine component. The safety bus system also includes at least one second bus-capable module (14) connected to at least one safety function (24), at least one bus controller (16) configured to control the respective machine components via the corresponding first bus-capable modules (14), and at least one bus line (18) interconnecting the first and second bus-capable modules (14) and the at least one bus controller (16). Further, when the safety function is selected, the bus-controller (16) variably controls the respective machine components based on the sensed operational characteristics and a type of the safety function such that a number of various flexible safety concepts are applied the (see also paragraph [025] in the specification).

It is respectfully noted Yonekura does not teach or suggest an emergency stop functionality nor a bus functionality. Rather, Yonekura discloses a "rotational angle detector" (encoder), whereby signals can be assigned and compared at each angular position. Further, the Office Action indicates the controller in Yonekura variably controls the respective machine

components based on the sensed operational characteristics and the type of the safety function and cites Figure 5A. However, it is respectfully noted Fig. 5A does not illustrate a bus structure. Rather, Fig. 5A represents a program decision-making flowchart with various conditions related to running a press. Yonekura does not teach or suggest a uniform bus structure which ensures that standard signals that are not relevant to safety and information that is relevant to safety is transmitted simultaneously and safely as in the present invention. That is, Yonekura merely discloses information relative to safety can be processed with a microcontroller. This differs from the present invention in which signals relevant to safety are distinguished from the signals not relevant to safety and are transmitted in one system.

In addition, in Yonekura, the bus and the controllers are positioned on a circuit board, which exchanges the signals between the different components of the controller. This differs from the bus system of the present invention, which includes a processing unit and which collects signals from sensors and passes the signals on to actuators.

Further, Jensen et al. is merely directed to a temperature surveillance method of different regions in a blast furnace. The temperatures of the different regions of the furnace are monitored including a check as to whether the temperatures exceed a certain predetermined value. If the values are exceeded, a safety stop is triggered. However, Jensen et al. also does not teach or suggest the claimed bus system and safety features as in the present invention.

Accordingly, it is respectfully submitted independent claims 1 and 14 and each claim depending therefrom are allowable.

Further, it is respectfully submitted the additional rejection of claim 5 under 35 USC § 103(a) as unpatentable over Yonekura in view of Jensen et al. and Ishii has also been overcome

as claim 5 is a dependent claim and Ishii also does not teach or suggest the features recited in the independent claim 1.

In addition, it is respectfully requested this amendment be entered as no new issues have been raised (i.e., claims have not been amended to further distinguish over any applied art).

CONCLUSION

In view of the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone David A. Bilodeau at (703) 205-8072 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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